IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF OREGON

PORTLAND DIVISION

UNITED STATES OF AMERICA, Plaintiff, v. W. JOSEPH ASTARITA, Defendant.	Case No. 3:17-cr-00226-JO May 25, 2018 Portland, Oregon

EVIDENTIARY HEARING - DAY 5

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TRANSCRIPT OF PROCEEDINGS

BEFORE THE HONORABLE ROBERT E. JONES

UNITED STATES DISTRICT COURT SENIOR JUDGE

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TRANSCRIPT OF PROCEEDINGS

(May 25, 2018)

(In open court:)

THE COURT: Good morning, everybody.

MR. MALONEY: Good morning, Your Honor.

MR. CARY: Good morning.

THE COURT: Ready to go?

MR. MALONEY: Yes, Your Honor.

PLAINTIFF'S CLOSING ARGUMENT

MR. MALONEY: Good morning, Judge Jones. Paul Maloney for the government.

THE COURT: Good morning.

MR. MALONEY: May it please the Court, Counsel, Mr. Astarita.

THE COURT: Just a moment. Fine. Everything is fine.

MR. MALONEY: Your Honor, we're here today for closing arguments in the motion in limine in the case involving United States v. Mr. Astarita. The question that the government seeks to answer as part of this trial answers the question who fired the round that caused impact "W." Through multiple expert witness testimony that you've heard, the government seeks to answer that question. We answer that question with this 3D diagram.

This 3D diagram reflects the work of multiple experts seeking to find an accurate point in time near to when impact "W" struck Finicum's truck shortly after he crashed it into a snowbank.

It positions the individuals relative to where they're depicted on the video surveillance at the time -- at and near the time of the shot.

Now, I know the Court knows the legal standards, but they do help to inform the broader audience in the community what this litigation all week has been about. The experts in this case will be permitted to testify to their opinions within their respective fields if they are able to testify to a reasonable degree of certainty. Absolute certainty is not required, and the Court has broad latitude to make admissibility determinations. Experts may be qualified based upon their knowledge, skill, experience, training, and education. The expert testimony must be both relevant and reliable. And the government, as the proponent of this expert testimony, must demonstrate those by a preponderance of the evidence.

As the Court is well aware, the United States Supreme Court has informed us what factors may be considered. And this is not an all-inclusive list. Again, the Court has broad discretion as to what factors are important to determine the reliability of the methods. It's not the conclusions of the

experts that matter. It is the reliability of their methods.

Things like whether the expert's theory and technique or method can be or has been tested, whether it has a known or potential error rate, whether the methodology has been subjected to peer review and publication, and whether there's standards controlling its operation and its general acceptance within the relevant community.

You heard first from Mr. Frank Piazza. He was the audio/visual expert from New York City who came to testify to this Court to the work that he did on this case.

In essence, Your Honor, he identified the points in time on the Cox video where there was gunfire, the critical gunfire that we're concerned about as potentially causing impact "W."

Shots four and five. Those are the shots that occurred just as Mr. Finicum was getting out of his truck. He synchronized that Cox video to the FBI aerial surveillance videos so we could know and see where the operators were on the roadway at and near the time of shots four and five.

He enhanced those videos for clarity, and he synchronized those within frames of the FBI synchronization and within nine frames of the Deschutes County synchronization. There were three synchronizations that you heard about in this -- during the course of this proceeding. Mr. Piazza's synchronization, the FBI synchronization, and the DCSO synchronization.

And it's important, Your Honor, I think, to demonstrate

that although they were not all synchronized to the exact same frame, they were synchronized to within a second of each other's work. And that, according to the expert, Mr. -- Professor Smith, was within that range of certainty, around the time of shots four and five, that he determined to be 34 frames. Just over one second.

You heard from firearms experts Victoria Dickerson and Michael Haag. Ms. Dickerson was the Oregon State Police forensic examiner who responded to the scene and later examined the Finicum truck and determined the trajectory of impact "W" using ballistic rods and a centering cone.

Mr. Haag reviewed her work, and you heard him testify that he could not validate her work without conducting his own independent test, and that's what the government hired him to do, and he did so. He still used ballistic rods. He measured the angle of impact using a different methodology, which has not been challenged in this case. The 3D scanning technology. He employed a different method to measure the impact "W." He used his rocker method. It has been described different ways, the rocker method, the lead-in method, and others, but the technique is the same, and you saw him demonstrate that technique using the infamous box now and his trajectory rod. And you saw and you heard how solidly that rod places into that trajectory -- into that lead-in mark when he demonstrated how it comes up and down in the rocker method and seats into that

groove.

You heard his opinion, as validated by studies, literature, as well as the empirical studies that he provided. Those were the 3D scans he conducted where he shot into the box, and he shot into the red car at similar angles, and he was able to replicate impact -- impacts that shared features with impact "W."

What is important and the takeaway is the horizontal azimuth. That is the angle from the front of the truck to where the bullet struck the truck, and it is that line of bearing, relative to the front of the truck, that will determine where that round came from.

The vertical angle that you heard about was different by 11 degrees, and that was explained because Ms. Dickerson used the centering cone method, and she was more accurately measuring the angle of deflection that the bullet took after penetration with respect to the vertical angle.

The horizontal azimuths were within 3 degrees of one another. Ms. Dickerson and Mr. Haag's measurements in the important regard for this case were only 3 degrees separate.

Both of those angles come back to where the defendant was standing with his rifle shouldered, trained on the Finicum truck, clearly depicted in the video.

You heard from Kevin Turpen. He was the deputy who responded to the scene, the crash reconstruction expert who

supervised the total station data collection. And how he plotted those into a diagram, he placed Ms. Dickerson's trajectory into that diagram and estimated the positions of the individuals present on the roadway. Individuals whose identities he did not know. That's an important consideration, Your Honor. He was just trying to figure out who is our potential source. Where did this bullet come from? What's the point of origin? And inside the trajectory cone, as calculated by Ms. Dickerson, was the defendant.

You heard subsequently from 3D Scene Reconstruction Expert Toby Terpstra. Again, a second expert brought in by the government to review the data in this case and arrive at independent conclusions. He collected point cloud data from the Finicum truck and from the scene. He measured the total station survey data. He took total station survey measurements at the scene. He conducted a careful frame-by-frame analysis of the video involved, as well as the photographs from the scene. He employed camera match photogrammetry techniques to align the scene, place the vehicles in -- and the bipeds in their relative positions to that scene, informed by the video surveillance, and he created a 3D model of that scene .3 seconds before shot five.

And, Your Honor, you've heard a lot of testimony about video 0000002, and I'd like to play that, just the relevant portions, for the Court.

(Video played.)

MR. MALONEY: Now, there's a lot going on in that scene, especially with two videos playing side by side. What I prepared for the Court is a 34-frame clip from that scene at and near the time of shot five. That's going to run here in a loop so that you can look back and forth and see the movements of the individuals on the scene.

(Video played.)

MR. MALONEY: 34 frames, Your Honor. That's what you saw there played in a 30-second loop.

Mr. Liscio, you heard from him. He said that there wasn't enough information for him to know what was going on in that series of events depicted on that video. He blew it up, and he didn't know. He couldn't tell where people were.

Again, right before shots four and five.

Shortly after shots four and five.

.3 seconds before shot five.

Just over one second later.

Zooming in, this was the frame that Mr. Terpstra utilized for the match. .3 seconds before shot five.

Notice where the defendant is standing. His feet are firmly on the ground, separated in a shooting stance.

And there are other individuals. When you play the video, you can see them moving in the front of the middle-blocking truck. Just over one second later, the figures in front of the

centering-blocking truck are more defined. Mr. Astarita's stance, if it has changed at all, has changed minimally. He is still in a position, in a shooting stance, with his weapon drawn.

From that -- from those frames, Mr. Terpstra performed his 3D scene reconstruction and placed the individuals. Again, he used a frame .3 seconds before shot five and just over one second later. You heard him testify about his range of certainty and how he was able to move the individuals and -- and the critical vehicle, Mr. Finicum's vehicle, and how he plotted that on this frame that I'm showing the Court right now. This is in his report, Your Honor.

And you see that there's a little fuzzy area around each of the individuals as well as the Finicum truck, and, correspondingly, around shot five. That fuzzy area is the area in which Mr. Terpstra was able to move the vehicles. And once they got out of alignment, in his judgment, in his professional opinion, he determined that they were no longer aligned, and that was how he determined the range of certainties in -- that he detailed and documented in his report.

Through the course of this proceeding, you've heard from multiple defense experts. None of these experts performed their own independent tests. None of these experts were retained to perform their own independent tests. These experts were performed -- were retained to evaluate the government's

experts' methodologies.

And you heard their testimony about their critiques in each respect. According to Bruce Koenig, Mr. Piazza did not perform gunfire analysis. You also heard from Mr. Piazza, the government's expert witness, who has previously worked for the Williams & Connolly firm, who testified that he didn't even hold himself out as a gunfire analyst. He wouldn't -- he did not offer an opinion in that regard. He did not perform that work. All he was doing was identifying when those shots occurred.

Mr. Koenig indicated that his sync was poorly documented. We heard from Professor Smith what he did not need the frames, the frame count, like Mr. Koenig testified, in order to evaluate and render an opinion on the accuracy of the Piazza sync.

You heard from Matt Noedel. Mr. Noedel was the defense firearms expert. He testified that he would not have used the methods used by Ms. Dickerson and Mr. Haag, that he would have used a different certainty range, a larger certainty range than the plus-or-minus-5-degree certainty range that they testified to, but he could not state how large a range of certainty he would use.

He was asked on cross-examination how he would have measured shots four and five, those low-angle impacts like "W." He testified that he would have aligned the ballistic rod along

the lead-in mark, and that's the critical inquiry, Your Honor. That gives you the horizontal azimuth.

Both Ms. Dickerson and Mr. Haag measured that line, measured that lead-in mark, came within 3 degrees. It is a reasonable inference and it is no leap in logic that if Mr. Noedel employed the test -- employed the methodology that he described by taking the rod, aligning it with the lead-in mark, and pressing down, as he testified to, that he would have achieved a similar horizontal azimuth as the two government experts.

He would have -- he testified he would have used a larger certainty cone, but he didn't know, and he didn't try to measure impact "W."

You heard about -- I think it's Dr. Bray, Dr. Andrew Bray, and he pointed out the statistical flaws in a 10-year-old study that Mr. Haag performed and used as a basis for his testing and range of certainty.

You heard from Eugene Liscio. He was critical of the 3D model and the manual camera matching techniques employed by Mr. -- Mr. Terpstra.

And, finally, you heard from Clifford Mugnier who was critical of the manual camera match photogrammetry, yet testified that if he were asked to perform a 3D camera match he would be a layman in that regard and that he did not have the necessary skills and experience to perform a 3D camera match or

build a 3D model like Mr. Terpstra. You heard him testify that he was not familiar with the applications and software used to formulate that 3D model.

What he was -- what he does know is his projection photogrammetry. And you heard him testify about that, and you heard him testify about his exhibits that he made at Walgreens.

Your Honor, with all due respect, evaluating a twenty-first second technology with technologies from the 1970s is an unfair comparison. The model was not built to be viewed under photographs created at Walgreens. You heard multiple witnesses testify that that 3D model is best viewed in a virtual environment on a computer screen. That's how it's made to be viewed.

In sum, Your Honor, impeachment does not compel exclusion. Rejection of expert testimony is the exception, rather than the rule. Disagreements amongst experts over controlling standards is not a basis to exclude expert testimony.

Counsel stated in his opening statement that this issue is so important. It is important, Your Honor. The community needs an answer. The government has sought out multiple independent experts employing complex scientific methods, methods that they fully documented, that they subjected to scrutiny, that the defense was able to scrutinize and point out every single minute problem. That proves the point, Your Honor, that we have met the *Daubert* standard. The fact

remains that they have documented this so thoroughly that they are able to be scrutinized. It is not as if the experts are taking the stand and saying, "I looked at it, therefore it is."

That's what the defense experts did. They looked at it; therefore, it is.

Finally, the last witness you heard from, Professor Jeff Smith, he testified -- and I think this was important, Your Honor -- that forensic sciences, they deal with nonideal data. It's not a laboratory. It's a crime scene. It's a crash scene. This was surveillance video from two miles away. The government has no dispute about that. It is what it is, and it is incumbent upon the government to endeavor and relentlessly pursue the truth of the matter. That's what we have done. We're not afraid to have multiple experts review this evidence. Had they come to different conclusions, we would have approached this with an open mind. However, they came to one conclusion. One consistent conclusion. The defendant was the only person in a position to make and take the shot that caused impact "W."

Thank you, Your Honor.

THE COURT: Thank you.

DEFENDANT'S CLOSING ARGUMENT

MR. CARY: Rob Cary for Mr. Astarita. I would like to begin this morning by thanking the Court and all the Court's

staff for everything they've done for us this week. Literally for looking out for our health and safety, for struggling with us to understand these highly technical and sometimes dense areas of evidence, for the time to present our evidence and our arguments. There is an argument that this -- made earlier that this hearing was not necessary, and I think that what has been elicited during this hearing this week of hard work proves the importance of actually hearing from the witnesses and having a -- actually having a hearing.

I would like to thank everybody in the courtroom for all the hard work they have put in so far and the hard work ahead. And it's hard for me to believe that we've only been here a week. It seems -- it seems much more. It is hard to believe we only started on Monday. And before digging into the individual issues one by one, as the government did, I want to provide a little context.

From where we sit, the context is this: Every expert that they proffered made major mistakes. It's not just impeachment. They made mistakes. They often admitted those mistakes. I'm not suggesting anything but good faith, but mistakes go right to the heart of what this is about. It's about methodology. I think one of our themes is is that this is what happens when people in good faith and with enthusiasm push the envelope of science further than it can be pushed.

In Mr. Liscio's words yesterday, he said it's, quote,

"overly aggressive." He said it raises fundamental issues that go beyond what science can deliver. And we've worked very hard to expose those mistakes, as we're duty-bound to do. It's required a lot of hard work, a lot of resources, and I'm sure at times we've tried everybody's patience. But from where we sit, we find it very frustrating when every time we expose a mistake we hear the same refrain, "It doesn't matter."

Well, this is a hearing about methodology, and mistakes do matter. They've pushed the envelope too far.

Let me give some examples. Mr. Piazza. We were told in the government's opposition brief, the same brief in which they said we don't need a hearing, that the error rate of his sync is less than one frame. At the hearing you heard it was at least 11 frames. And you heard from Mr. Smith yesterday and from the government just now that it may be 34 frames.

The government seems to say, well, Agent Astarita isn't moving during those 34 seconds. But that's not the point. The point is that there could be a lot of movement from others during those 34 seconds. And the loop, to the extent I could see at all, that they just showed, was supposed to be a 34-second loop, showed that people are moving -- or, I'm sorry, 34-frame loop showed that people were moving. And people were moving. And the important point is other people could have moved into that zone, the cone, whatever that cone is, and I'll talk about that in a bit.

The government only wants to focus on Agent Astarita, but there are other -- where those other people are moving is vitally important. That's why the sync is so important.

Ms. Dickerson testified that she basically used a technique that did not account for deflection. She measured an angle that went over everybody's head. And the government's response to that is, "Well, don't worry about it. It doesn't matter. Deflection only affects the vertical angle. It doesn't affect the horizontal angle."

There's no scientific proof for that at all, not at all, and I'll get to more of that in a minute.

With respect to Mr. Haag, he relied on his 2018 article to validate plus or minus 5 degrees. That's the whole theme of the government's opposition to our *Daubert* motion. We were surprised when we saw that because we thought that his 2008 article had nothing to do with the rocker method. They said, "Actually it does. There's some rocker method data in there." So we dug deeply, and we spent Mother's Day weekend calling around. We were able to find a few experts early on who weren't available in the time frame. We spent Mother's Day weekend trying to find an expert, and thank goodness we did.

Only after we find a statistician who comes in and says that the 2008 article was all wrong as a matter of statistics, they get on the -- did he get on the stand and he says, "Well, actually he's right about the statistics, but it doesn't

matter. Trust me. Plus or minus 5 is the cone. Everybody is doing it."

Deputy Turpen, he measured the vehicle at -- at least nine hours after the incident, and he acknowledges that while he was there the vehicle moved. But the government says, "Well, it doesn't matter because it probably didn't move beforehand," even though it's in a deep snowbank, goes up to Deputy Turpen's thigh. It moved while he was there nine hours later, and I think we are being asked to suspend common sense to think it didn't move before that.

And then Mr. Terpstra, he made lots of mistakes. I'll get to those in a minute. But the most fundamental and the most basic is he used the wrong image. The analysis was supposed to be -- and he puts it over and over again in his report that it was the exact time of shot five based on the Piazza sync. It turns out he was using the wrong image all along.

This is a hearing about methodology, and this methodology is riddled with errors. It doesn't meet the standards of *Daubert*.

Now, another thing that we heard and we just -- we heard it in the theme of the examinations, and we heard it just now, is that, well, our experts didn't try their methods. They suggest that Mr. Noedel should have tried the rocker method. I have two responses to that. First of all, it's the government's burden, not ours, to prove the reliability of the

methods. That's a -- should be especially true in a criminal case; but, moreover, our experts should not feel compelled to try methodologies that are not grounded in good science, tested, objective, except in the relevant community.

Mr. Noedel says, "I don't use the rocker method because it's subjective and it's sensitive to small subjective movements."

Dr. Bray said, "I can't calculate the proper statistical cone because the design was poorly studied. I don't have good data."

Mr. Mugnier and Mr. Liscio said, "The placement of people in trucks is purely subjective, and we can't do it from the blurry photos." As I said in my opening, "You can't get there from here."

The burden is on the party proffering expert testimony. There's no burden on us to do an alternative analysis, especially when it's impossible to do so.

So let me go through the points one by one. And the first point is going to be the rocker method. I'm then going to turn to the plus-or-minus-5-degree cone. Then I'm going to talk about Ms. Dickerson's method, the Terpstra diagrams.

I'm sorry. I need to put something in Mr. Francis's fine jar. I meant "the Turpen diagrams."

Deputy Turpen's diagrams, the Terpstra model, the syncing of the video, the enhanced video images, and then the eight

gunshots.

Let me begin with the rocker method first.

Ms. Dickerson testified that before she attended one of Mr. Haag's seminars where he demonstrated it to her in October of 2016, she was not aware of it. None of her trainings or reading had ever taught about it until October of 2016.

She testified that the Oregon State Police has no standard operating procedure for the rocker point method. In fact, there's no standard operating procedure for the rocker point method anywhere. It's not published literature. It's not in unpublished literature. You've got to go to one of Mr. Haag's seminars to learn about it. And it's not even written down there.

When Ms. Ferguson asked, "Why is it not in your materials for your course?" He says it's, quote, "a minor technique and only a small part of the class." It's not even in his own book.

And I admire his enthusiasm for this technique. He's trying hard. Since one of his students showed it to him in 2004, he's been an enthusiastic proponent of this test. But it can't be repeated.

When Ms. Ferguson asked if he used tape or the magnetic clamp first, he says he doesn't know. That's because there's no repeatable process written down anywhere about how to do it.

Here is what I heard him say as he described it: With

great enthusiasm, and in -- in good faith, I believe, but he said, "All you need is a finger's width. You rock it back and forth, and you can hear where it drops into the lead-in mark. It settles in with just a little bit of nice pressure. You make sure the trajectory rod goes down and settles into place, and then you evaluate. I just hold it and take a scan in place. When I'm working alone, I duct tape it." He says, "You can almost hear it. You can feel it." In his notes -- I don't think he did this in court, but in his notes he called it "the sweet spot." He admitted readily that it depends on who is doing the feeling and the training, and he says it has to be a thinking person to use it. He says, "You feel how solid it drops in, and you look down the rod to make sure that it's not far off."

Your Honor asked, "Is it subjective?" And he candidly said, "Yes, it is." But then he goes on to say, "Well, everything in science is. But this is different. This is all about feel." That's what his testimony was.

Mr. Noedel says the literature doesn't say how to do it. There are no protocols. He says there's a spectrum of these techniques. On one end of the side is stability -- of stability in the spectrum is if you have two points that are far apart with a solid anchor, that's pretty stable. The centering cone, not so much; the rocker point, not at all.

With respect to acceptance, he said it's the same sort of

spectrum. On one end you've got two points far apart with a solid anchor and that somewhere in the middle is the centering cone, and the rocker point is on the far end of the spectrum.

The problem, according to Mr. Noedel is you use just a last little bit of the rod. It's very sensitive to a minor change. If you are off by 1 millimeter in terms of where you place the rod, you're 14 degrees off. There's no assurance that any two people are doing it the same way. He says, "I don't use it because it's subjective."

They talk about some studies. One of those studies was the Kerkoff study which talked about vertical angles only and specifically disclaims the study for car metal. The other thing I heard reference to was something by somebody called Hueske, I believe, who doesn't really describe it, everybody admits. There's some reference to a shoulder, but it's not really a study of this. It's not clear at all. Everybody admits that.

So, Your Honor, the rocker point method doesn't meet the five factors. It's not tested. All we really have is the 19 shots that were taken for this case only after the fact. And there were a lot of exhibits. But if you count them up, there's 15 shots taken at one point; four shots at another. That was not a blind study. It was done by the proponent of the test himself. He did it himself for this litigation, and there's absolutely no statistical analysis for it.

It's not published in any peer-review materials. It's not even published in Mr. Haag's own book. I'll get to the error rate in just a second in my next section. There are no standards. It's not written down anywhere. It can't be replicated, and it's not generally accepted. Mr. Noedel doesn't use it, and there's not a single case that they have been able to cite where it's been accepted in court.

That's the rocker method.

I now would like to talk about the plus-or-minus-5-degree cone. This cone is really important, because if you saw it even from their picture from Mr. Terpstra, their crystal clear diagram that we also object to, that 5-degree cone is everything because there are other people not very far outside of that 5-degree cone.

Ms. Dickerson testified about the 5-degree, plus or minus, uncertainty range. She says it's a, quote, "standard rate of error." She says it applies across all trajectory methods. She cannot say where it comes from.

Mr. Haag surprised us -- the government surprised us when they said that the 2008 article, which we thought on its face only applied to the two-point -- two-point trajectory method actually applied to rocker point as well.

When we brought in a statistics expert, he quickly agreed that the statistics were mishandled. Mr. Haag quickly agreed that the criticism was correct, and there was no fightback at

all.

Now let me talk briefly about Dr. Bray and what he found. He found that there were three design flaws. The first is a lack of blinding. The students knew what the right answer was. Mr. Haag says, "Well, of course they did, because this was teaching, and I wanted them to know -- I wanted them to learn." That's not good research.

Dr. Bray said the conditions were not held constant. Ms. Ferguson calls that mixed methods, mixing together three different methods. I call it lumping all three methods together.

The reason that's so important is because we have one method that people in the community seem to think works pretty well. Two fixed points far apart. And you take the results from that and you mix it in with the rocker point, and perhaps the centering cone, as well, and you don't get a good -- good result.

Dr. Bray says this is a poor estimate for any particular scenario, a scenario whose result is driven by which method you use most. In this case, we don't even know.

In addition, Dr. Bray found that there were improper treatment of outliers. The outliers, the far-off measurements that's supposed to measure accuracy of how this works, were just thrown out. They were not used.

Dr. Bray's bottom line: Because these problems, any

estimate resulting from this data would not be appropriate for application to a specific scenario, such as the rocker point or the centering cone.

He also found computational errors. Misuse of the standard deviation. He said that the English language definition of "standard deviation" was incorrect and the math formula was wrong. It's something he's never seen before. He talked about misordered operations. Basically, if you have a measurement that's off by 20 degrees this way and 20 degrees that way, it's averaged out to zero. He finds that improper.

Finally, said there's improper weighting. The same weight was given if there were just two shots fired as if there were 15 shots fired. That's not correct.

Finally, he found that the -- what he called the Gaussian distribution, which I call a bell curve, was -- was unfounded and should not have been applied. His bottom line: He cannot recommend the 15 percent.

We did hear about these 19 shots he fired for this litigation after the fact. That's a subjective test. In the first place, it's not blind. It's done by the proponent of the method. There's no statistical analysis. And even then, he did not write down -- it's not written down anywhere what he did.

Could I have, Ms. Oakley, Exhibit 5-23, please? And if we can focus on the language about good scientifically defensible

methods. This is from his 2008 article.

You'll see the very last three lines. He writes, "Good scientifically defensible methods often require an in-depth statical analysis." That's absolutely correct. Your Honor, those are Mr. Haag's own words. There was none of that here. All they have is this 19 shots fired for this case and this case only.

He also wrote in his 2008 article that a larger cone may be necessary for shallow-angle shots. That's really important. Because as we see from the -- the very photo or the very diagram that they started off with, where that cone is is vitally important, because there are other people just outside of that cone. 5 percent matters a lot.

Mr. Noedel testified with respect to the plus-or-minus-5-degree cone that here is what really should happen. He said we should, first of all, define the methodology being tested. Then we should do a properly designed test. It should be blind. We need to make sure it's reproducible before testing. We need to eliminate the variables, and that's what needs to be done to advance this technique before it's ready for court.

And in testimony that -- at least those of us at the defense table found riveting -- that's Mr. Francis's quote -- was he explained to us how the trajectory analysis or how the 5-degree cone came to be. He said back in the '80s and '90s

people were using pencils and strings to do trajectory analysis, and they started looking for validation. And people in the field said, "Well, if I have two nice, solid stable points that are far apart, surely I'm good with plus or minus 5 degrees." And that's how plus or minus 5 degrees became a standard. And it wasn't until Mr. Haag's study that we decimated, I believe, that people actually had any hard data about it at all.

There is one study that Mr. Haag talked about. Mr. Noedel told us, "Well, that's about handguns into walls with solid points." It's completely, completely different. It doesn't justify plus or minus 5 degrees. Certainly not for the rocker point method or the centering cone method.

He said it's not good for anything other than two stable points with a hand cone.

So the problem, Mr. Noedel says, is we just don't know how big our area is because we'd never done big studies that one would need to do to deal with the variable as has been done with DNA, and he says he can't use plus or minus 5 degrees for every scenario. He says all the books warn against that, and you especially can't do it for shallow angles.

So with this 5 -- plus-or-minus-5-degree cone, here is what we have: We have unrebutted, uncontested evidence from Dr. Bray that the study that they relied on in their opposition brief is deeply flawed, can't be relied upon. We have no

attempt whatsoever in any record in this case to justify plus or minus 5 degrees for the centering cone, other than to say that -- that that can be the standard for stable points.

Mr. Noedel says it's true for two stable points. That is the industry standard. But the only attempt to justify for the centering cone is to say it's industry standard. And the only fightback we have on the rocker point method is 19 shots. The 19 shots taken for this case under conditions that just don't meet even, under Mr. Haag's own standards, the statistical validity that would be required to establish plus or minus 5 degrees. It was subjective. It was done just for this litigation. It's not blind. There's zero statistical analysis. Plus or minus 5 degrees assertion doesn't meet the *Daubert* test for the centering cone method or for the rocker point method.

So the next thing I would like to talk about is Ms. Dickerson's trajectory analysis. She used a centering cone. She testified candidly that there's no standard operating procedure for the centering cone technique either. She described the defect, defect "W," that we saw in the government's presentation, as, quote, "somewhat atypical." She doesn't remember whether the rod wiggled in the hole, but she testified that if she was unhappy with how it fit, then she would use a centering cone and would stick a cone in the hole. She admitted on cross-examination that when she did so she

assumed that the bullet ran through the center of the hole.

She also testified that it's likely that deflection occurred, and of course she has to admit that because her cone goes over everybody's head. Her explanation was that there's vertical deflection but no horizontal deflection, and that's the same thing we heard just now. But there's no science for that. None.

Mr. Haag did not do a centering cone because of deflection. He says that's basically -- said that's not the right technique to use here. That's why he used the rocker point because of deflection.

And if I can have Exhibit 5-24, please, page 9.

This is from Mr. Haag's book, and this is what he says about deflection.

If we can have the fourth line down where it says, "A bullet may be deflected by passage through a tree branch, a windshield, or a panel of sheet metal," and then he goes on to write, "Such deflection can occur in any direction in the examples cited: Up, down, right, or left." That's what Mr. Haag, the government's own expert, says about deflection. He -- he doesn't say anything about it's only going to affect the vertical angle. He says it did go left or right.

And he also testified on Ms. Ferguson's cross-examination that yaw can play a role in deflection. And yaw is the side-to-side movement on a vertical axis that happens in a

bullet. And he writes in his book that bullet yaw at impact plays a role in deflection.

He also testified on Ms. Ferguson's cross-examination that it takes about 200 yards before a bullet goes to sleep and it dampens out that yaw.

Mr. Haag, in essence, testified that the rocker point method is a better method. It's not good for all the reasons we said. It's not acceptable. But it's better than what Ms. Dickerson did because of deflection.

He testify that he and Ms. Dickerson measured different things. He said that Ms. Dickerson measured the path through the metal after deflection. He says, "I was trying to measure the path before deflection."

Ms. Ferguson asked about it. He says, "By going to the path inside the metal, you're tracking the deflected bullet. The rocker point is more tracking the path of the bullet before deflection."

Now, I didn't hear it today, but there was some suggestion that, well, maybe this was really a two-point measurement, it wasn't -- it wasn't -- it was the sort of measurement that's accepted. But that's not proper use of the two-point measurement system, and that's because these holes that were used were very close together. There's no measurement. Ms. Dickerson made no measurement about how far apart they were, but it's common sense. It was the roof of the vehicle.

And there's a little fiberglass, some foam, and some fabric. And there are actually three holes on the other side, apparently because the bullet broke up.

I would like to show what was shown to Mr. Haag, which is the Garrison passage.

Will you blow that up, please?

Garrison writes, "When two defects are this close together, a quarter-inch error throws off the angle measurement. Two defects are unreliable in proving a shot angle estimate." That's what he writes below. Two defects that are very close together are unreliable in providing a shot angle estimate. That's no escape for the government to say this was really a two-point -- two-point measurement. We heard some of that in the opposition. We heard some suggestion of that in the testimony. It -- we did not hear it in the argument just now.

So it's also worth noting, I think, on Ms. Dickerson's measurement that she says it was, quote, "Very approximate." So how do the five factors of *Daubert* apply to -- apply to Ms. Dickerson's analysis? One, has it been tested? There's no evidence in this record, none whatsoever, that the centering cone method has ever been tested.

To the extent that this was really supposed to be a two-point -- a two-point measurement, it's unrebutted evidence that you can't use it in this -- when two points are close

together.

The error rate, there's nothing on centering cone. I frankly can't tell whether it was supposed to be part of the 2008 study or not, but they made no attempt to validate it at all. Has it been subjected to peer review and publication? No. It's not published anywhere. Not -- not anywhere that's part of this record.

Are there standards controlling this operation? No. Ms. Dickerson said there's no standard operating procedure covering it. Is it generally accepted? There's no evidence of that whatsoever on this record. It doesn't pass *Daubert* either.

That takes us to Deputy Turpen's diagram, Your Honor. You may remember that when Mr. Angeli cross-examined Mr. Turpen, he admitted that when he testified before the grand jury he was absolutely certain it was round five that struck the vehicle and round four that missed. Now he testifies he's not so sure, and the reason is is because an agent told him that right before this hearing.

Mr. -- the government said that it was very important that Mr. Turpen did not know who was who when he did that diagram. But if you examine his testimony closely, he testified on cross-examination that he was told by investigators that they doubted that Oregon State Police shot that bullet. And he was told -- he wasn't told the names of people, but he was told

which individuals were FBI agents and which were Oregon State police officers. It wasn't blind at all. It was not objective. It was subjective. He was told about it.

And what the government said, I'm sure in good faith, I think, is -- I think is belied by the evidence.

In terms of qualifications, Deputy Turpen has no bachelor's or advanced degrees. He's never published anywhere, and he admits that the measurements he took were a full 9 to 14 hours after the shooting. Those measurements, by the way, have no -- those are measurements of the truck, but they have no bearing on the proper placement of individuals, which is really what this is about.

With respect to Mr. Finicum's truck, he admits that the truck was not in the same -- same position at the time of the shooting because at least it settled from left to right during that time. But he can't say how much or how because -- how the positions changed. There's uncontroverted testimony that Mr. Angeli brought out that the left rear portion of the truck sank into a large depression.

Neither Mr. Turpen, nor anybody else from the government on the investigation team, analyzed whether that event may have caused the truck to rotate at all. He admits that the truck settled by 3 to 4 inches when he was there, but there's no analysis about what happened before. He does admit that it may have settled by even more than that before he arrived nine

hours after the shots were fired.

He admitted that the truck would not have settled evenly because the weights of the various people in the truck, people moving around, temperature of different parts of the truck, shifting weight, the fact is nobody measured any part of how it actually settled, but everybody in this case admits that the truck moved just a little bit. It has a major effect on -- on the trajectory cone.

The government says, well, it could not have rotated because the truck was locked into position. It required two tow trucks, I think the testimony was, to remove it. But Mr. Turpen admitted that that was the condition at that time when he arrived after all the settling, melting, refreezing, and it may have been different at the time of the shots.

If I could have Exhibit 8.8, Ms. Oakley, please. And if we can blow up on the truck there. This is a picture of the truck after he arrived that the government didn't show, and it shows that at this point, unlike the ones they showed, the truck is not encased -- the wheels are not encased in snow. There's a lot of room for movement in that truck.

Mr. Turpen himself didn't do any analysis to see what happened to the cone of probability at the back end of the truck if it's shifted by just a few inches from the time of the shooting. And he did not build any margin of error into his analysis. And that's a big problem for everything we've heard

today, which is we -- we all agree that the data was lousy, that they didn't have the best evidence to work with, but the problem is they come in here and present this evidence as if it's precise and if it's exact. You have robots of people -- replicas of people, models of people, holding their guns in exact positions, and it's just not so. It's just not the way -- not the way it worked. And it's presented as science, and it's very dangerous.

Mr. Turpen admits that when you compare his diagram to what it is that Mr. Terpstra did, he did it just based -- the best he could based on subjectively trying to place people in there.

If you put them side by side -- if I can have Exhibit 4-10 and Exhibit 4-23 side by side. He admits that they're in different positions, the green -- really, every single one of them. Just one example, in Mr. Terpstra's diagram, the green person is in front of the orange person, and in Mr. Turpen's diagram, the green person is behind the orange person, and so it goes.

He testified that the way he decided where to put whom was based on a video sync done by someone named Zach Neemann, which we can see no evidence of in this courtroom. None of Mr. Neemann's methods or findings have been put into evidence. We don't know what his sync was. And perhaps most importantly of all, we have no idea which frame it is that Mr. Turpen used.

And the government said something that -- they said that everything has been documented so that we can know. That is absolutely not the case. We have no idea what Mr. Turpen did. He did not document what he did.

And when he was cross-examined by Mr. Angeli, he basically admitted to all five of the *Daubert* factors that -- that this doesn't -- doesn't meet *Daubert*. He says his method has never been tested. There's no known error rate associated with it. We heard this is somehow science that was done blindly. It wasn't done blindly. There's huge errors with it, and there's zero error rate associated with it. The method he used has not been published or subjected to peer review. He didn't try to replicate the method to see if he got the same result, and he never asked a colleague to apply the same method to see if he could replicate the result.

He admits -- he admitted it's not to scale. He admitted it's not accurate, but he cannot say how much it's off. Very definition is something that cannot be presented as science to a jury with no error rate. He has no idea what the error rate is. These diagrams don't build any margin of error.

Finally, what it is is it's a drawing of an unidentified photo that purports to be scientific. It's not. It's deeply prejudicial, and it should be excluded.

That takes us to Mr. Terpstra, which is the fifth of my eight points I want to cover this morning.

THE COURT: Would you like to take a recess at this point?

MR. CARY: That would be helpful, Your Honor. Thank you.

THE COURT: We'll take a 15-minute recess.

(Recess taken.)

THE COURT: Proceed.

MR. CARY: Thank you, Your Honor. I would like to return to Exhibit 8-8, if I could, and perhaps correct a misimpression I may have given in my enthusiasm.

This is the truck -- photo of the truck that was taken at about 1:30 in the morning, more than nine hours after the incident, when Mr. Turpen and his team arrive on the scene. And I'm told that the photos that the government showed were taken at roughly the same time. The point is that the government did not show this particular angle which shows that the rear wheels are not encased in snow.

It's also worth pointing out that you can see this downward slant. And as Mr. Liscio testified, if there was to be movement, it likely would have been in a downhill direction. The government's analysis does not take into account any movement at all, notwithstanding the testimony from Mr. Turpen and others that the truck clearly moved.

And it's undisputed, absolutely undisputed that if the truck moves just a little bit, it changes the trajectory angle

completely.

So now let me turn to Mr. Terpstra. He's an animator with a junior college degree. He's not an engineer, like Mr. Liscio, and he's not a photogrammetrist. It's true that Mr. Mugnier is a photogrammetrist who does not use animating software, but that's the science. And when this case started or when we had the opposition brief, we were told that this was all going to be about photogrammetry. And, in fact, we later learned it's not about photogrammetry at all.

Mr. Terpstra or what Mr. Terpstra did, it's -- in the words of Mr. Mugnier, it's subjective and it's graphic arts.

Mr. Terpstra stated repeatedly in his report that he was using the Piazza frame at which shot number five was fired. On day number one, you may remember from my cross-examination that we couldn't figure out why the crosshairs didn't -- with Mr. Piazza, we couldn't figure out why the crosshairs didn't line up between what was in Mr. Terpstra's report and the Piazza sync. We asked Mr. Piazza. He did not know. It appeared to be the wrong frame, and, lo and behold, when Mr. Terpstra comes into court, he admits that he, in fact, said he was using the wrong frame all along.

In a case where small amounts of time matter because maybe Mr. Astarita wasn't moving but the other people were, that matters a lot. He used the wrong time frame. And in some ways, it makes you wonder why we're here in the first place.

Now, there was a lot said in the government's presentation, in terms of what Mr. Terpstra said in their opposition brief about all the data that was collected by Mr. Terpstra, and it's true that he collected a lot of data in order to build his models of vehicles and in order to build the scene. But the most important things in the case is where do you place the people and where do you place the Finicum truck? And that, Your Honor, was subjective. It was done with eyeballing. It was not done with data collection. It was simply a subjective placement.

Remember when Mr. Liscio showed us, when we zoomed in, and he said, "Can you see a human being there?" And, at least to my eye, on many of them I couldn't, or I could just see a few fuzzy pixels. He took that image, and he took his biped models that you get off the internet and placed them in there as if that's an actual outline of the people that were there that day.

He relied on Mr. -- he relied on an agent in order to decide what the height of them was. He did no other analysis. There's nothing scientific about it at all. It's 100 percent subjective. He took these blurry videos and turned them into this crystal clear diagram.

There was no error rate. None whatsoever. The only test he used was whether it aligned with his eye. He agreed with Mr. Francis on cross-examination that his test, which was

repeatedly looking at it to see if it lined up, was a test of precision, not accuracy. That is, he tested whether he got consistent results, but he didn't -- he did not calculate -- his test has nothing to say about whether he got correct results.

And the problem is, as we heard from our experts, is that just because it looks like it lines up doesn't mean it lines up. It's not accurate as a matter of math. Especially when you're dealing with a fuzzy photo like this.

Mr. Terpstra, when he was re-called on direct examination produced a study done in April of 2018, and that study was something done under completely different circumstances than this. It used much more high-resolution photos. It was close to the ground. Not far away. There was not a snowbank, a dynamic snowbank, in that photo. And under those much better circumstances, using this manual camera matching, which is an eyeballing technique, he got -- came up with a 13-inch error rate. That changes everything in a case like this when inches matter.

He admitted on cross-examination from Mr. Francis that in order to do photogrammetry, the real science here, correctly, you can't place an object into a 3D model unless the object being placed is touching something firm that has been scanned. In this case, he didn't do it. He couldn't do it because of the snowbank.

Can I have Exhibit 8-8, page 2, please, Ms. Oakley?

So that's actually in the summer. That's the real ground that it should have been attached to. And if I can have 8-8, page 1, please. And that's the snowbank. He admitted that without that you can't use photogrammetry.

The literature for the technique that he did use says you shouldn't use foliage in order to do camera matching, and that makes sense because the place of leaves and trees and plants may change. But he did. He didn't follow his own literature. It says "Don't use lane markings if they've been repainted." But he did. He didn't follow the literature even for the technique he used.

The literature says that photos taken at great distance are poor candidates for camera matching. Nevertheless, he used photos taken more than two miles away, and common sense tells us that those blurry photos are not very good for a technique that really relates -- involves nothing more than eyeballing.

He didn't correct for lens distortion, even though his own article says you should correct for lens distortion. He used the wrong focal length. He was off by a third. He misplaced the vertical camera by a third of a mile.

And government said -- when we started and we got the opposition brief, the government said the sync is off by one frame at the most, and he acknowledged the sync rate -- the error rate for the sync would affect his analysis. And he was

cross-examined by Mr. Francis about Mr. Piazza, saying, "Well, now I think the error rate is 11 frames." Did he not build that into his model? He said he should have, but he didn't.

Mr. Liscio, the engineer, testified. I said in my opening that there were lots of measurements of the truck at the scene which had changed. When the rubber hits the road, what really matters is where you place the people and where you place the vehicles. And here is what Mr. Liscio said about that. He said it's, quote, "purely subjective," end of quote, what Mr. Terpstra did. He said the wiggle room is massive. He said there's no calculations to check, unlike real photogrammetry where you can do calculations to check. Not so with the technique employed here.

He testified that with analytical photogrammetry, when math is used, rather than the subjective testing, the computer tells you if it's a mistake. He says with camera matching, which is subjective, there's no way to know. In his words, we could be fooled by this technique. Gross errors are possible.

He testified to a grave discrepancy between the Terpstra model and the total station measurements that were taken. They're completely inconsistent with the government's theory. He was showing how with the -- with the different rods and how the truck moved and how it couldn't possibly be correct, how it was inconsistent, and that goes to the very heart of the reliability of this method.

He said there are no studies, much less peer-reviewed studies, validating what was done here by Mr. Terpstra. Dropping a vehicle into a snowbank, dropping biped models where he believes, based on his own eyesight, that the humans were, it's purely subjective. And, by the way, Mr. Smith agreed, as well -- I think it was the last question of the hearing, or at least Mr. Francis' last question -- that what was done here was subjective.

There's no error rate. It doesn't pass *Daubert*. It's presented as science when it's, in fact, art.

Mr. Mugnier, who I described in opening as the godfather of photogrammetry with the impeccable credentials in terms of analytical photogrammetry, and it may be that he's been at it a long time and he doesn't use animation software, but that's part of the point. Just because you can use animation software to drop something into a model doesn't mean that it's good science.

He says there's no way to measure the accuracy of what -- what Mr. Terpstra did. He says it's purely a subjective way of guesstimating where people and objects were. He says you're simply using the eyeball to check whether it's plausible, and he testified, as Mr. Liscio did, that you need -- in order to place an object, you need to have what he calls a plane of rectification, a flat surface that has been scanned.

That's why you can't place the truck in the -- in the

snowbank because you couldn't -- couldn't -- couldn't scan the snowbank. Nobody has argued otherwise.

Then he showed the Court the images floating in space with his stereoscope. He says this is the evidence of errors. He says this shows the blunder of trying to camera match in a monoscopic way. He said the error is evident but it cannot be quantified. That goes right to the heart of *Daubert*, whether the error can be quantified, and here it can't. That's what is so dangerous about this is it's being presented at precise science when someone who's been at real photogrammetry for decades tells you that you cannot -- cannot calculate an error rate. He described it as subjective graphic art, not science. And he may be a layperson in graphic art, but he is as qualified a scientist as you can be.

So to return to the *Daubert* five factors, with respect to Mr. Terpstra's methodology, whether the expert's theory, technique, or method can be or has been tested, what he did has not been tested. It cannot be tested. That's what Mr. Mugnier said. You can't test it.

Does it have a known or potential error rate? No. That was the testimony from our experts. You can't figure out an error rate for this. It's graphic arts. It's eyeballing. You can't calculate an error rate. If it was real photogrammetry, you could; but not with what was done here.

And he admitted as much when he said, "Well, what I tested

was my precision. Whether I get the same -- I, in my subjective judgment, get the same result over and over again." It wasn't a measure of accuracy.

Whether it's been subjected to peer-review and publication, I went through the ways that he departed from the -- from the articles, even for what it is that he did here, whether standards controlling its operation, not -- not the way -- once again, not the way he did it here.

Whether it's generally accepted within the relevant community, the relevant community here, if this is science, should be photogrammetry. Not graphic arts. And we brought Mr. Liscio and Mr. Mugnier here to say that what he did -- there are perfectly good ways to use photogrammetry, but what he did here is not accepted in the community.

Now I would like to turn to the syncing of the video frame by Mr. Piazza. In some ways, I'm not sure why this matters, because the whole point was to give Mr. Terpstra the right frame to use. But if it does matter, let's look at what he did in his testimony. He says he cannot, in fact, associate a frame with a shot. He doesn't know whether it's shot four or alleged shot five that matters. He didn't really apply any scientific process at all.

If I can have Exhibit 1-14, please. If we can blow that up just a little bit, please.

This is the photograph that he used to sync. He came in

here and he showed us two photographs that he used to sync the video. This is one. And it's a little hard to see there, but you can see something -- perhaps it looks like a telephone pole -- outside the -- the window of the video that was taken inside the car, and he syncs that up with this photo. But he admitted on cross-examination that you could see the -- that telephone pole for many frames before and many frames afterwards, and it doesn't seem to be very good evidence of syncing to me.

Then if I could have the other one. 1-17, please.

And then this is -- this is the other one he used that he said gave him confidence that his syncing was correct, and it's hard for my eye to see it, but apparently he sees an arm there, and he says this is evidence that I've done a precise -- precise -- precise syncing.

He doesn't have any calculation of an error rate. The government originally said in its brief, based apparently on what they told him, is that he was off by one frame at the most. I think he then said "Maybe I could be off by up to three frames." He then said on cross-examination, or actually maybe it was brought out on direct, that it could be plus or minus 10 frames. He later examined -- expanded it to 11 frames.

This is what they said in their opposition brief. "He will testify that the two videos may be off by a frame at most

and likely less."

We now hear from Mr. Smith that it's -- 34 frames is the proper error rate. It's gone from 1 to 34. That's not science. It just seems to be a guess.

It fails the other *Daubert* factors as well. Not only is there no scientific error rate, but his technique cannot be replicated or tested because he didn't keep any notes or any records of what he did. He just showed us those two frames in court. That's -- that's all he showed us.

It's not been subjected to peer review or publication. There are no standards, and there's no proof that it's accepted within the relevant community.

The government has not met its burden on this sync. It fails on every single *Daubert* factor. And we heard earlier this morning that everything was documented, just not true. Not only were there no notes from this expert. To this day, we haven't gotten a meaningful report from him.

The only thing really in that report is a vague description of the software he used, the hardware he used, and some identifying information with respect to the videos that he was given and how he identified them after he converted them.

I now would like to talk to my second-to-the-last topic which is the enhanced videos.

I don't think we heard from the government at all on the enhanced videos today. Mr. Piazza was very clear and very

forthright that he corrected color and enhanced sharpness on some of the videos. And to be clear, he didn't do it on the main sync that he did, and he did not eliminate. He says he did not eliminate any objects, and we take him at his word on that.

But what he did do, by color correcting and sharpening, is he modified pixels. Both Mr. Koenig and Mr. Liscio testified about this, and there's no contradictory testimony.

And it's especially troubling because he didn't keep any records of what he did. None whatsoever. So we can't go back and figure out what it is that he did.

If I could have Exhibit 2-5, please. If we could focus on the right-hand side, please. Blow that up a little bit.

So Mr. Piazza was kind enough to go back after the fact and give us an example of the sorts of things he did. This is not something he did at the time, but he did it afterwards. And Mr. Koenig testified that this shows clearly that he modified the sharpness. This is an example of what he did. That's down at the bottom there. He moved that -- that setting to change the sharpness, and he testified, and it's uncontradicted that when you change the sharpness, you change the pixelation, and you especially take blurry photos -- things that are blurry and make them look less blurry. In a case where who is moving when and at what time -- how many times have we heard the government say, "Mr. Astarita is standing

there without moving at all." It's completely unfair to us to change that pixelation, to change the blurriness, without even giving us a record of what it is that has been done so we can testify to it.

For that reason, it should be excluded.

In addition, in the upper corner, Mr. Koenig explained to us, if we go to that far left and maybe circle that far left, that gray area, he says that when you correct the color, you actually remove pixels. And without a record of what was done, that's not right. We should use the original video in this case, not enhanced video, especially when there's absolutely no record of what was done in order to change the pixelation on the photos.

Finally, I would like to talk about Mr. Piazza and the identification of eight gunshots. It is undisputed that Mr. Piazza is not an expert on gunshot audio analysis. It's undisputed that he looked at narrowband spectrogram and low-resolution waveforms.

You heard Mr. Koenig, who is the world's leading authority on this, that those are insufficient to determine whether you are, in fact, hearing a gunshot or hearing something else. For example an N-Wave that often precedes a second gunshot. Similar to a sonic boom with an airplane or a reverberation of that, such as an echo. And Mr. Koenig, Your Honor, didn't do anything that any juror can't do, which is simply listen.

The technique employed by Mr. Piazza doesn't pass muster under *Daubert*. He is not an expert. His technique has not been tested. In fact, it's contrary to what the leading expert in the world said it should be. He hasn't even tried to calculate an error rate.

What he did do was inconsistent with the standards that Mr. Koenig says are the proper standards. His technique hasn't been subjected to peer review and publication. It is not accepted. He wouldn't know whether it was accepted because he's not an expert.

Those are the eight points I wanted to cover this morning, Your Honor.

I want to conclude by referring back to the cross-examination of Mr. Mugnier at the end of yesterday and a theme that I think we heard in the government's presentation this morning, and he was asked -- Mr. Mugnier was asked in a question whether the nature of forensic work is to do the best you can with what you have, and, I think, a theme that has emerged throughout this hearing again today is that the government's done the best they can. And in some ways that's certainly true. They -- the evidence here is -- is not very good. The video is very fuzzy. The truck was on a snowbank. That's nobody's fault. We don't know where it actually turned up.

But "the best we can" is not the standard under *Daubert*.

Daubert requires validated, objective, repeatable, nonsubjective science. If the data doesn't allow us to reach valid conclusions, then we shouldn't do so. We shouldn't reach -- in good faith and enthusiasm, they may be trying to do their job, but you can't reach where science won't take us. If you have a shallow-angle atypical bullet hole that does not allow you to reach a conclusion, then you can't reach a conclusion with it.

If you have a blurry photo taken from over two miles ahead in a snowbank that doesn't allow you to build a model using valid photogrammetry with valid scientific techniques, then you shouldn't build a subjective model using eyeballs.

Daubert does not allow for subjectivity when good science fails to deliver the desired answer. It certainly doesn't allow subjective opinions to be presented as if it's good, accurate science without an error rate, which is what we see happening again and again with the government's evidence.

Your Honor, I close with the way I opened, which is that a picture purporting to be based on science is worth a million words, and I noted that that's the way that the government opened and closed their presentation today. That photograph is -- is devastating to the defense, but it's not based on good science. The evidence -- scientific evidence needs to be objective. It needs to be repeatable. It needs to be accepted in the scientific community, and it needs to be validated by

large well-designed studies.

The standards that are applied need to be meticulously followed. That didn't happen here. And anything else is simply too dangerous in any sort of case, but especially in a case where human liberty is at stake.

The government expert -- expert evidence, Your Honor, should be excluded. All of it. Thank you.

THE COURT: Thank you. Do you want to confer before you give your closing?

MR. MALONEY: I have one -- I'm ready to proceed. I have one matter to briefly consult with defense counsel regarding potentially a government exhibit that we had discussed earlier this morning.

THE COURT: Sure.

(Pause-in-proceedings.)

MR. MALONEY: Your Honor, the parties have conferred. There was a study that Mr. Terpstra used during his second testimony, when he testified about the LiDAR data that he used with the USGS LiDAR data and plotting the cones and the car. Counsel and I have conferred. The government would like to supplement the record. We will be providing to the Court, after court today, two exhibits: A copy of the PowerPoint that Mr. Terpstra used as well as a copy of the article.

THE COURT: Very well.

PLAINTIFF'S REBUTTAL ARGUMENT

MR. MALONEY: May it please the Court. Your Honor, you've heard from the parties. We've summarized four days' worth of litigation for you. Again, the government wants to reiterate Counsel's sentiments and thank everyone who assisted us throughout this process and helped us with these issues.

Counsel mentioned the burden. And to the extent counsel interpreted the -- my assertions that those tests were not performed by the defense experts, that was not the point or the purpose of my remarks. We certainly own our burden. We know it is our burden to persuade this Court to a preponderance of the evidence that this evidence, these experts, their testimony, their exhibits, are admissible. My point being two -- twofold. They had the opportunity to conduct those tests -- each one of their experts. They had the materials. We provided them with everything they needed to do to independently do those tests. Mr. Liscio had all the raw data from which he could have used his own software, his own PhotoModeler application, to process Mr. Terpstra's 3D data and render his own model. He chose not to do so. That goes to the bias of the witness.

He could have adduced that. He could have had his own analytical photogrammetry model done. Mr. Mugnier could have used his own glasses and blinked at the printed-out results and tested it. That could have been done, and it wasn't.

Also, secondly, it emphasizes the government's willingness to entertain a contrary expert opinion. Yet, what we heard throughout Counsel's closing was every single possible minor and sometimes significant discrepancy. We'll acknowledge that, that there was a difference of .3 seconds from the frame that Mr. Turpen -- Terpstra -- I'll but a dollar in the jar -- used and represented in his report as the time that shot five was fired. It was .3 seconds before.

And to the extent that it doesn't matter, that wasn't the government's point about the settling. The government's point about the settling of the truck and the reason why we brought that up is plain and evident from Professor Smith's report. The settling of the truck is an unknown. It wasn't measured. To rely on that is bad science, but it's an unknown, and it's an acknowledged unknown in all the government's expert witnesses. They state it plainly they don't know. There's some evidence to suggest it may have shifted, but they are unable to quantify it.

That was why it was so important for Mr. Terpstra to conduct that 3D scene reconstruction at and near the time of shot five, before the truck had any chance to settle in the snow.

The other important point I would note, each and every one of the defense experts were asked whether or not they could rule out the government experts' conclusions, and each of them,

with the exception of Mr. Liscio, were asked that question, and they all acknowledged that they could not rule out the accuracy of the government's experts' conclusions within that field of study.

He talked about deflection and that there was no -- and that that was possible. That there could have been horizontal deflection of shot "W." So -- by that, it might be helpful to demonstrate with Government 34. The shot comes in at this angle. Vertical deflection would be the bullet taking a turn and going into the truck at a steeper angle, entering the truck steeper than it impacted the truck. Horizontal impact -- or horizontal deflection would mean that the bullet turned and took a right-to-left change in direction upon entering the truck.

There was evidence of vertical deflection. There was no evidence from any of the individuals who actually examined impact "W" of horizontal deflection. They acknowledge that it was possible, but there is no evidence that the bullet did take a turn.

The defense's own expert, Mr. Noedel, acknowledged that he, too, would have lined up that trajectory rod along the lead-in mark. That is what delivers the important measurement with respect to the trajectory in this case. The horizontal measurement is everything. That determines the trajectory and point of origin of that shot along the horizontal plain. And

if you recall, the individuals were lined up horizontally across the roadway. That tells you who -- who that trajectory points to and identifies the possible shooter and the potential point of origin for shot "W."

Mr. Mugnier talked about his photogrammetry glasses and said that all you had to do was look through the glasses and blink really fast or wink back and forth and you could see that the images were given dimensionality. If there isn't a more subjective test that was offered in this case than that, it's unclear to me.

He called it graphic art. With all due respect, it took a three-person team hours and hours to reach that result. It was much more than graphic art. This was careful study. It was frame-by-frame analysis of the videos involved in this case to make sure they got it right.

The enhanced videos were referenced. The enhanced videos were used in the -- were not used to base the model. The enhanced videos were used so that Mr. Terpstra and his team could assess and analyze the movement of the parties within that scene and the potential movement of any vehicles within that scene. There is no evidence that the vehicles moved during the time -- the critical times of this inquiry. There's -- there's evidence that individuals moved. There is no evidence that the defendant moved appreciably out of the cone.

There was a statement made about Mr. Piazza's audio analysis of the gunfire and that he didn't do a gunshot -- a true gunshot analysis. He wasn't trying to find out what caliber of gun it was that was fired at those points or distinguish between different guns or determine a range from the point of -- a range from the microphone that recorded the gunshots. He simply identified them as gunshots based upon the amplitudes involved.

You heard from Professor Smith who ruled out the potential for a reverb or an echo or an N-Wave affecting the audio analysis in this case.

And, frankly, Your Honor, it -- the only person who didn't readily identify that recording as gunfire was Mr. Koenig. Everybody -- anyone can listen to that with common sense and reason and determine that that truck was being shot at at that point in time.

In total, we litigated for four days, and what was adduced was nothing more than impeachment evidence. As we know, Rule 702 is a rule of inclusion and not a rule of exclusion. And rejection of qualified expert testimony is the exception and not the rule. Where experts disagree, that's an issue for the jury. It will involve credibility determinations, because certainly some of these issues that were brought up involve factual disputes. Juries decide that in these situations.

When analyzing this case and this evidence, one of the

defense's themes is it's all too subjective. It depends on the individual opinion of the experts, and that's not good enough. That is a similar line of attack. We see it in court cases throughout this country on latent print examinations. But when there are sufficient points of comparison, that evidence is admissible.

So take a look at the points of comparison in this case. The audio and video analysis, they were all synchronized of one second of one another, and that's using Professor Smith's inarguable, overly conservative 34-frame count, where he says he looked at the frames inside the truck at and near the time of shot four and five, and with the -- with confidence, inarguably, he says they are synchronized. And all of the different synchronizations that were used in this case are within that range of certainty.

The trajectory analyses, the horizontal azimuths, the measurements that matter were consistent between both examiners. Undisputed. And even the defense's own expert would have acknowledged that he would have lined up that trajectory rod along the same horizontal azimuth, but he didn't, and we don't have that data point.

The 3D model and the line diagrams. Take a look at them, Your Honor. One was made to be accurate within inches. That was the diagram for purposes of a speed and crash -- a speed analysis in a crash reconstruction. The overall geometries are

remarkably and strikingly consistent. Within the 3D model, the multiple points in the video that are consistent with the 3D model, the audio, the frame-by-frame analysis, the point cloud data, the consistency between the diagram and the 3D model, what Professor Smith described as the thorough and well-documented report, that it was subjected to testing and error rate analysis within that report.

Frankly, Your Honor, the government's experts have done their work. They've shown their work. They have subjected it to scrutiny and stand by their opinions. Each and every one of them testified that to a reasonable degree of scientific certainty within their area of expertise that that is their opinion.

Now, some of them were not conducting science. Counsel repeatedly references science as part of this. Science is one part of the inquiry, but there are many different types of expert testimony that are admissible under Rule 702. Any of those types of evidence, based on knowledge, skill, experience, or science.

Frankly, Your Honor, what the government has done here and demonstrated through this is a continuing and ongoing pursuit of the truth. Multiple experts were brought in to review the evidence in this case and to give us their findings. And with all due respect, Counsel has done nothing more than pick at the edges and refused to acknowledge the consistencies between

those opinions. The consistencies that matter.

They were asked to do their own independent examinations and to reach their own conclusions, not simply examine the methods of another expert.

You heard Mike Haag testify that when he was first approached could he validate Ms. Dickerson's work. Do you recall what his response was? "I cannot. I have to do my own independent test."

That's a scientist. That's an expert who approaches his work with integrity.

To the extent that his integrity is being questioned, that's an issue for the jury.

The consistent response from multiple experts lead to one inescapable conclusion: That the defendant was the only person in a position to take this shot.

Thank you, Your Honor.

THE COURT: Thank you. The -- if the counsel wish to submit a synopsis highlighting your positions, you're welcome to do so. I'm not requiring it, but I would like you to meet and confer. I would want both sides to agree to do that. If not, I'll -- I'm perfectly prepared -- not -- I'm prepared to make my findings and conclusions of law.

I again wish to extend my sincere professional thanks and personal thanks to everyone who has participated here. You manifested the highest level of professionalism. I appreciate

that immensely.

I have a wonderful collection of data from which I can render my opinion. As I stated before, I plan to take this expert by expert by expert.

If the government chooses to not call one of the experts, advise me, so I won't be doing moot work. But I don't anticipate that. So I hope to have my conclusions within two weeks. That's where we are.

Thank you again. Court is in recess.

MR. CARY: Thank you.

MR. MALONEY: Thank you.

(Hearing concluded.)

C E R T I F I C A T E

United States of America v. W. Joseph Astarita

3:17-cr-00226-JO

EVIDENTIARY HEARING

May 25, 2018

I certify, by signing below, that the foregoing is a true and correct transcript of the record, taken by stenographic means, of the proceedings in the above-entitled cause. A transcript without an original signature, conformed signature, or digitally signed signature is not certified.

/s/Jill L. Jessup, CSR, RMR, RDR, CRR, CRC

Official Court Reporter
Oregon CSR No. 98-0346

Signature Date: 6/11/18
CSR Expiration Date: 9/30/20